New Jersey Technical Guidance
Lead in Drinking Water at Schools & Child Care Facilities

The purpose of this technical guidance is to provide school districts and child care facilities with the tools necessary to prepare for and carry out a systematic sampling program for lead in drinking water at their facilities. The document was developed using tools from many sources, including the United States Environmental Protection Agency (USEPA).

The guidance includes the following documents, resources, and references (all are available at http://www.nj.gov/dep/watersupply/dwc-lead-schools.html):

- NJ Department of Environmental Protection: Lead in Drinking Water - Schools and Child Care Information
- US Environmental Protection Agency "3Ts for Reducing Lead in Drinking Water in Schools (2006 Revision)."
- Quality Assurance Project Plan Template
- Lead Drinking Water Testing Sampling Plan Template
- Sampling for Lead in School Drinking Water Tool Kit
- Frequently Asked Questions
- Template Letters:
    - Sampling Announcement Letter
    - Results Letter
- Examples of Completed School Packages
- NJ Certified Laboratories – Lead in Drinking Water

1. INTRODUCTION

Most sources (e.g. ground and surface water) of drinking water have no lead or very low levels of lead (i.e., under 5 micrograms per liter [µg/l] or parts per billion [ppb]).

Even though a public water supplier may deliver water that meets all Federal and State public health standards for lead, there may be lead in the drinking water because of the plumbing in the facility.

Once the water leaves the public water supply system or treatment plant, drinking water comes into contact with plumbing materials that may contain lead. Some lead may get into the water from the distribution system – the network of pipes that carry the water to homes, businesses, and schools in the community. Some communities have lead components in their distribution systems, such as lead joints in cast iron mains, service connections, pigtails, and goosenecks.

Interior plumbing, soldered joints, leaded brass fittings, and various drinking water outlets that contain lead materials are the primary contributors of lead in drinking water. It is also important to note that brass plumbing components contain lead. Although there is an increased probability that a given plumbing component installed prior to 1986 could contain more lead than the newer components, the occurrence of lead in drinking water cannot be

predicted based upon the age of the component or the school facility. Since 1986, all plumbing materials must be "lead free". The current law allows plumbing materials up to 0.25 percent lead to be labeled as "lead free". However, prior to January 4, 2014, "lead free" allowed up to 8 percent lead content of the wetted surfaces of plumbing products including those labeled National Sanitation Foundation (NSF) certified.

2. GENERAL OVERVIEW OF THE PROCESS

Before a District moves forward with testing, the following steps must be completed. These steps are further explained in the following sections of this document.

- Establish Partnerships and Roles
    - Select a Lab for Analysis: A NJ certified laboratory must conduct the analysis. For a list of NJ certified labs call the NJDEP Office of Quality Assurance at 609-292-3950 or view the list on-line at http://datamine2.state.nj.us/DEP_OPRA/OpraMain/categories?category=Certified+Laboratories.
    - Choose appropriate school staff to function as key team members
- Develop and sign a Quality Assurance Project Plan (QAPP) for the lead sampling and analysis. A QAPP template is available here.
- Create a Lead Drinking Water Testing Sampling Plan – A template is available here.
- Develop a Plumbing Profile for the plumbing system at each of your facilities.
- Determine Sampling Locations: At a minimum, all outlets regularly used for drinking and food preparation must be sampled including drinking water fountains and sinks found in concession stands.

3. PLANNING YOUR PROGRAM AND ESTABLISHING PARTNERSHIPS

Monitoring for lead in your school's drinking water is extremely important. You should start by identifying your existing resources, which include school records, available finances, and personnel. You should also research opportunities for assistance from your local public water supplier, State and local health agencies, and certified water testing laboratories.

3.1 Assigning Roles

Your school should assign responsibility to a key individual(s) to ensure that testing and follow-up actions are completed consistently. A person should also be appointed to serve as the liaison for communication with interested parties (e.g. civic groups, the media, etc.). One person or more may be involved in these activities, but it is important to clearly define responsibilities and to support those people in their roles. An effective program will require a team effort.

If your school decides to use consultants or lab personnel, their roles should be defined with respect to the responsible person(s) at the school (See 4.3 below). Contact your State drinking water program (NJDEP 609-292-7219) or local health department if you need advice on how to identify a qualified consultant.

4. DEVELOPMENT OF A QUALITY ASSURANCE PROJECT PLAN (QAPP) AND LEAD DRINKING WATER TESTING SAMPLING PLAN (SAMPLING PLAN)

4.1 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) is a document that describes the planning, implementation and evaluation steps involved in the acquisition of data that will be used to arrive at a specific goal. The overall objective for this QAPP is to determine the lead concentration at drinking water outlets within the District's schools so that corrective action(s) may be implemented at any drinking water outlets found to exceed the USEPA drinking water lead action level of 15 micrograms per liter (µg/L). For the purposes of compliance, any concentration greater than 15 µg/L (as defined as greater than or equal to 15.5 µg/L) is considered to exceed the lead action level.

The QAPP will be consistently applied by those involved in a School District's Lead Drinking Water Testing Sampling Plan (Sampling Plan), including but not limited to School District personnel, NJ certified laboratories, and Consulting firms/Licensed Site Remediation Professionals. Following the actions specified in this QAPP will provide a high level of confidence in the results of this and future rounds of sampling.

The School District Program Manager, School Project Manager, Individual School Project Officer, Certified Laboratory Manager, Laboratory QA Officer and third-party firm representatives (if district enters into contract(s) with environmental consulting firms to perform the sampling) are all parties to the QAPP and are required to sign-off prior to initiating any sampling.

4.2 Lead Drinking Water Testing Sampling Plan (Sampling Plan)

Testing for lead in schools requires a coordinated effort especially when multiple schools are to be included in the testing effort. Designated personnel and set protocols are essential to ensuring a coordinated effort. This Sampling Plan is developed to outline goals and responsibilities for sampling lead at a school's drinking water outlets used for consumption and food preparation.

The Sampling Plan contains the tools necessary to prepare for and carry out a complete and comprehensive lead sampling program. A Sampling Plan is a blueprint for how a sampling event or program will be executed. It should provide all the detail needed to ensure that representative samples are collected, handled, analyzed, and reported in a manner that meets the needs and objectives of the sampler. Implementing a clearly defined and consistently employed sampling protocol reduces the chance that the sampling process will be a source of error.

4.3 Who Should Create the Sampling Plan? - Leadership in Sampling

As discussed in Section 3, it is important to designate a school employee(s) to take responsibility of the sampling program and follow-up activities, even if someone else is hired to conduct testing. If laboratory representatives or consultants are used to conduct testing, you should ensure they have experience conducting lead testing at schools. You may wish to ask the laboratory or consultant for references.

4.4 Draft A Sampling Plan

Before collecting samples, draft a Sampling Plan. At a minimum, the plan should include:

- All sites used for drinking and food preparation;

- Unique names for each sampling outlet (e.g. 3rd floor hall fountain, cafeteria sink #1);
- A floor plan identifying all sampling locations;
- Explanation of how each outlet will be kept out of use for at least 8 hours but no more than 48 hours;
- A Sampling Form that includes:
    - The name and description of the sample collector
    - Description of sample collection (e.g. initial, flush)
    - Field notes (e.g. outlet leaking, not turned on etc.)
- A Plumbing Profile as described below; and
- A list of all filters (including manufacturer, make, model, and contaminants removed) installed at the school and the locations of use.

If laboratory representatives or consultants are used to conduct testing the Sampling Plan should be shared with them.

5. DEVELOPMENT OF A PLUMBING PROFILE FOR YOUR FACILITY'S PLUMBING

Before testing and correcting lead problems (if applicable), it is important to assess the factors that can contribute to lead contamination and the extent to which contamination might occur in your facility. You can best accomplish these objectives by developing a plumbing profile of your facility. If your facility has additions, wings, or multiple buildings built during different years, a separate plumbing profile is recommended for each. A plumbing profile can be created by answering a series of questions about your facility's plumbing. Every school is unique and a plumbing profile will help you understand the potential sources of lead in your facility. Conducting this survey of your facility's plumbing will enable you to:

- Understand how water enters and flows through your building(s).
- Identify and prioritize sample sites. USEPA recommends the following sites as priority sample sites: drinking fountains (both bubbler and water cooler style), kitchen sinks, classroom combination sinks and drinking fountains, home economics room sinks, teachers' lounge sinks, nurse's office sinks, sinks in special education classrooms, and any other sink known to be or visibly used for consumption (e.g., coffeemaker or cups are nearby).
- Understand whether you may have a widespread contamination problem or only localized concerns.
- Plan, establish, and prioritize remedial actions, as necessary.

6. WHERE SHOULD WE SAMPLE? - DETERMINING SAMPLE LOCATIONS

Every outlet used for drinking or food preparation, including ice machines, must be sampled. You must decide where to take samples and how to prioritize the sample sites based on your responses to the plumbing profile and your knowledge of the facility. Sample sites that are most likely to have lead contamination include:

- Areas with lead pipes or lead solder.
- Areas of recent construction and repair in which materials containing lead were used.
- Areas where the plumbing is used to ground electrical circuits.
- Areas of low flow and/or infrequent use.
- Areas containing brass fittings and fixtures.

- Water coolers identified by USEPA as having lead-lined storage tanks or lead parts. (Ideally these should be removed.)

It may be helpful to create a diagram of the plumbing in your facility and the outlets that will require testing.

7. LEAD SAMPLING – WHO, WHERE AND HOW?

7.1 Who Can Collect a Sample?

- A representative from a NJ certified laboratory
- Employee of the school district; or
- Representative of the school district (consultant).
- Have an adequately trained individual collect samples in order to avoid errors.

7.2 Who Should Do the Analysis?

- Analysis must be conducted by a NJ certified lab.
- Find a list of labs certified to test for lead here: http://datamine2.state.nj.us/DEP_OPRA/OpraMain/categories?category=Certified+Laboratories

7.3 How to Conduct the Sampling

USEPA recommends that a two-step sampling process be followed for identifying lead contamination. Lead in a water sample taken from an outlet can originate from the outlet fixture (e.g. the faucet, bubbler etc.), plumbing upstream of the outlet fixture (e.g. pipe, joints, valves, fittings etc.), or it can already be in the water that is entering the facility. The two-step sampling process helps identify the actual source(s) of lead.

In Step 1, initial samples are collected to identify the location of outlets providing water with elevated lead levels and to learn the level of the lead in the water entering the facility (i.e., at the service connection). In Step 2, follow-up flush samples are taken only from outlets identified as problem locations to determine the lead level of water that has been stagnant in upstream plumbing, but not in the outlet fixture. Sample results are then compared to determine the sources of lead contamination and to determine appropriate corrective measures.

NOTE

Sample Cold Water Outlets:

- Samples should be collected from the cold water faucet.
- For metered or motion-sensor faucets, the hot water valve needs to be closed prior to sampling.

Ensure that outlets not routinely used are flushed 24-48 hours prior to sampling. Additionally, a special procedure is necessary to sample ice machines (provided in Attachment H of the Sampling Plan Template).

Step 1: Initial Sampling

- Initial samples are taken from prioritized outlets (e.g., bubblers, fountains) in the facility. These samples determine the lead content of water sitting in water outlets that are used for drinking or cooking within your building(s).
- A sample is also collected from a tap located as near as possible to the service connection (i.e., the pipe connecting your facility to a larger water main).

Step 2: Follow-Up Flush Sampling

- If initial test results reveal lead concentrations greater than 15 µg/l in a 250 mL sample for a given outlet, follow-up flush testing is recommended to determine if the lead contamination results are from the fixture or from interior plumbing.
- Follow-up flush samples are collected and analyzed from outlets whose initial first draw results revealed lead concentrations greater than 15 µg/l. The purpose of this step is to pinpoint where (i.e., fixtures or interior plumbing) lead is getting into drinking water so that appropriate corrective measures can be taken.
- As with initial first draw samples, follow-up flush samples are to be taken before a facility opens and before any water is used. Follow-up flush samples generally involve the collection of water from an outlet where the water has run for 30 seconds. This sampling approach is designed to analyze the lead content in the water in the plumbing behind the wall.

School districts may wish to collect both initial and follow-up samples at the same time. This is more convenient and may save time and money; however, using this approach creates a trade-off between convenience and confidence. The confidence in the sample results will decrease since flushing water through an outlet immediately after taking the initial sample could compromise the flushed locations depending on the interior plumbing of buildings. Protocols for both options are provided in the Sampling Plan. School districts can decide which option works best for their situation.

More detailed sampling guidance is available in the factsheet titled "How to Collect Samples" on the DEP website.

8. RESULTS

The laboratories will provide the lead sample results to the district board of education (District) in an electronic format within the timeframe required under the contract. A spreadsheet of all results, the analytical results report, and the chain of custody forms must be included. The requirements are detailed in the QAPP.

The District will review and verify the final laboratory results and within 24 hours of this review shall make the test results of all water samples publicly available at the school facility and on the District website.

If any results exceed the lead action level, the District shall provide written notification to the parents/guardians of all students attending the facility, as well as the Department of Education (DOE). The notification shall include the following; a description of the measures taken by the District to immediately end use of each drinking water outlet where the water quality exceeds the permissible lead action level, and if necessary, the measures taken to ensure that alternate drinking water has been made available to all students and staff members, and information regarding the health effects of lead.

9. INVESTIGATION AND REMEDIATION

Remedies are described in detail in Section 5 of USEPA's guidance document "3Ts for Reducing Lead in Drinking Water in Schools (2006 Revision)."

It is helpful to develop a Short-term Remedial Action Plan that details short-term immediate actions that should be implemented if the results exceed the action level. For example:

*For sample sites **with First Draw sample results over 15 µg/l**:*

IMMEDIATE ACTIONS

- ✓ Shut off all water sources (e.g. fountains, sinks) used for drinking.
- ✓ Provide alternate source water (e.g. bottled water), as necessary.
- ✓ Post "Do Not Drink- Safe for Handwashing Only" notice at faucets that are used for purposes other than drinking and food prep (e.g. handwashing).
- ✓ Inform the Public as described in Section III of USEPA's guidance document "3Ts for Reducing Lead in Drinking Water in Schools (2006 Revision)."

10. FOLLOW UP (LONG-TERM SOLUTIONS)

If a remedy such as flushing or treatment is installed schools should:

- Develop and adhere to an Operation and Maintenance Plan that includes periodic inspection/maintenance of the treatment and/or flushing equipment.
- Maintain a service agreement for maintenance and repair of installed treatment units.
- Develop a regular testing schedule to ensure that treatment continues to be effective.

11. COMMUNICATION

In addition to testing for lead and remediating any contamination problems, a lead control program should also include a public information component. The USEPA recommends school districts notify the school community (i.e. parents, staff, students, etc.) of the availability of the sampling results and to make the sampling results available in administrative offices for inspection by the public, including parents, staff, students, etc.

There are six public notification methods that can be applied alone or in combination to communicate information about a lead control program:

- Letters and Fliers
- Mailbox and Paycheck Stuffers
- Email and Websites
- Staff Newsletter
- Press Release
- Presentations

School districts should be transparent with their community throughout the entire process and communicate in multiple languages as necessary. Notification should be made to the community prior to the lead testing event to inform when sampling will take place and what the Sampling Plan entails. Additional notification should be made upon receipt of the analytical results advising of the results and what actions, if any, were taken to remediate elevated lead levels.